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DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

FILE NO.

OUTLY REPORT

f o r

September, 1921.

# MONTHLY REPORT

1920.

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October 8, 1921.

Dear Sir:

The following is my report on conditions in the Yellowstone National Park, and on the operation of the park, for the month of September, 1921:

**GENERAL CONDITIONS:**

While the average temperature was nearly 7 degrees below normal, there was less rain than usual for September, and with the exception of one bad storm, the weather conditions for travel were good. A heavy storm which occurred on the 2nd and 3rd made the roads muddy in places on the 3rd and 4th, but otherwise they were excellent for travel throughout the month.

**Weather.**

The park tourist season, which ended with September 20th, will go on record as being one of the best in the history of the park so far as weather conditions for travel was concerned. September continued excellent in this respect except for one or two storms, which are always expected, and at the present writing the weather conditions are still ideal for traveling and the few belated tourists who have come in recently have been delighted with the park trip. The enclosed monthly meteorological report for the month, together with the following notes furnished by the local Weather Bureau, show these conditions in detail:

**General:** The month as a whole was cold, windy, and somewhat deficient in moisture, but with about normal sunshine.

**Temperature:** Monthly mean, 46.6°, is 6.8° below normal. With one exception, 1912, it is the coldest September since the record began in 1907. No unusually low temperatures occurred, but there was a marked daily deficiency extending over the first three weeks, except the first two days, which were the warmest of the month.

Precipitation: Total, 0.84 inch, is 0.17 inch below normal. Practically all occurred as rain and over 50% of the month's total fell on the 2nd and 3rd.

Snowfall: Total 0.1 inch, which fell on the 19th. However, traces of snow occurred on the 10th, 11th, and 12th. The average or normal September snowfall is 1.6 inches.

Wind: The total movement of 6660 miles is considerably the highest of record, but the maximum velocity of 39 miles from the southwest on the 22nd has been exceeded several times.

Sunshine: Percentage of possible, 64, is about normal.

#### Travel.

The usual regular daily schedules were maintained by the Yellowstone Park Transportation Company to three railroad terminals adjacent to the park and between all points on the regular park tours, up to the close of the regular tourist season, September 20th. Regular schedules were interrupted on two days only, namely, September 3d and 4th, when on account of heavy rains and consequent dangerous condition of the road through Dunraven Pass, the regular buses from Canyon to Mammoth were routed via Norris. Train service to these terminals was placed on a winter basis at the close of the tourist season, and regular automobile service through the park discontinued. The few travelers who have since desired to see the park have come with their own transportation, or have been permitted to hire a car for the purpose.

The Chief Ranger's Travel Report for September, with copy of his report for September, 1920, for comparison, is enclosed. There is also appended to this report a nine-page mimeographed report which was prepared in the office of the Chief Ranger at the close of September, which contains the most complete summary of travel for the year just completed, by means of transportation, by different entrances, by States, by makes of cars, etc., that was ever issued from this office.

The comparisons shown in these tables are most interesting, the principal points being that the total travel increased from 79,777 in 1920 to 81,651 in 1921; the number

coming by rail decreased from 30,236 to 24,469, while that by private transportation increased from 49,491 to 57,182. A comparison of travel by months during the summer tourist season, June to September inclusive, is also of special interest in that it showed the greatest increase over last year in June and July, gradually decreasing as the season passed. The fact that the total travel exceeded any previous records, notwithstanding the fact that there was much business depression throughout the country, is very gratifying as showing the growing popularity of our National Parks.

#### Labor and Supply Market.

Supplies of all kinds are plentiful and the prices have apparently about reached the bottom of the downward trend and are about normal again. Coal is about the only item needed which is higher in cost than last year. We are paying \$6.00 per ton at the mine in Montana as against \$5.00 a year ago, which with transportation added makes the total cost of our fuel coal about \$10.84 per ton in our bins.

There is no demand for laborers in the park, as all activities are being discontinued gradually and men are being laid off daily.



## II. PERSONNEL:

### Employees.

On September 1st, there were 317 employees on duty under this office, which had been decreased by September 30th to 171.

The following list shows the number of employees of various classes serving under appointment during the month, with a statement in general of the kind of work in which they were engaged:

<u>No.</u>	<u>Class</u>	<u>Kind of work performed.</u>
2	Asst. Engineers	In charge of engineering work in the park. (1 N.P.S. at Large).
1	Surveyor	Surveying for construction work at Canyon Camp (Transferred effective close of Sept. 10th).
7	Clerks	1 Disbursing Agent and Purchasing Clerk; 1 on cost account work and property; 1 on time keeping; 1 on orders, proposals, and vouchers; 2 stenographer-typists on stenographic work, files, etc., 1 on cutting and pasting clippings (on leave without pay effective Sept. 21st to Nov. 15th inclusive).
2	Electricians	Read meters, did necessary line work, and operated power plant regular shifts, including Sundays.
4	Foremen	1 in charge of stables at headquarters; 1 in charge of road sprinkling; 2 on road maintenance.
1	Telegraph Operator	Sent and received all Government Western Union messages; operated one shift on telephone switchboard.
2	Telephone Switchboard Operators	Operated telephone switchboard, daily shifts, including Sundays. (1 on intermittent service only).

<u>No.</u>	<u>Class</u>	<u>Kind of work performed.</u>
1	Master Mechanic	In charge of shops, and of repairs to heavy road machinery.
1	Blacksmith	General blacksmith work, including shoeing horses in shop, overhauling and repairing tools and equipment.
1	Master Painter	General shop work, including repairs to equipment and buildings at headquarters, also painting and placing of road signs.
1	Chief Lineman	In charge of power plant, telephone lines, and of maintenance crews on telephone lines.
2	Laborers	Teaming, freighting, and miscellaneous work at headquarters.
1	Handyman	Acting Steward and Master of Transportation.
1	Buffalo Keeper	In charge of tame buffalo here.
2	Asst. Buffalo Keepers	1 Assisting Buffalo Keeper; 1 in charge of hay ranch operations at Slough Creek. (1 resigned effective at close of Sept. 20th).
1	Buffalo Herder	Assisted Buffalo Keeper.
1	Park Naturalist	Scientific research work and developing museum.
1	Master Plumber	In charge of general plumbing and water systems at public automobile camps, and of construction of plumbing system at new ranger stations.
2	Automobile Mechanics	Repairing motor trucks and touring cars.
1	Watchman	Made hourly patrols during night at headquarters and took care of office.
1	Carpenter	Repaired buildings at headquarters.

<u>No.</u>	<u>Class</u>	<u>Kind of work performed.</u>
1	Chief Ranger	In charge of ranger force.
1	1st Asst. Chief Pk.Ranger	In charge of northern district and of trail crews.
2	Asst.Chief Park Rangers	1 in charge of southern district; 1 in charge of western district.
24	Park Rangers	In charge of ranger stations; directing traffic, motorcycle patrols, checking automobiles, and on duty in Chief Ranger's Office. (1 resigned effective Sept. 5; 1 resigned effective Sept. 30th; 2 WAE furloughed indefinitely at close of Sept.19)
34	Temporary Pk.Rangers	On duty in Chief Ranger's office, making patrols, directing traffic, checking automobiles, also Information and Guide Service (latter discontinued Sept. 20th). (29 discontinued during month).

In addition to the regular employees listed above under appointment, the following were employed temporarily by the day:

	<u>On Sept. 1st</u>	<u>On Sept. 30th</u>
Steam Shovel Operator,	1	1
Lineman,	1	0
Stonemason,	1	0
Painter,	1	1
Plumber,	1	1
Carpenters,	3	1
Blacksmith,	1	0
Mechanics,	11	10
Foremen,	3	3
Cooks,	23	8
Skilled Laborers,	66	46
Laborers,	51	16
4-Horse Teamsters,	22	4
2-Horse Teamsters,	74	12
	<u>219</u>	<u>103</u>
Appointments,	<u>98</u>	<u>68</u>
	317	171



### Leaves of Absence.

During September, annual leaves of absence were granted as follows:

Albert Collins,	Electrician,	3 days-Sept. 1-3
James Dupuis,	Park Ranger,	3 " Sept. 1-3
Dorothy A. Bowling,	Clerk,	$\frac{1}{2}$ " Sept. 1 (noon)
do	"	1 " Sept. 2 (S.L.)
Eri A. Allan,	Chief Lineman,	$1\frac{1}{2}$ " Sept. 7(noon)-8
W.H. Riley,	Automobile Mechanic	1 " Sept. 6
G.C. Dustman,	Clerk,	$\frac{1}{2}$ " Sept. 10 (noon)
Dorothy A. Bowling,	"	6 " Sept. 14-20
G.B. Dewing,	Park Ranger,	6 " Sept. 13-19
Charlie R. Stinnett,	Blacksmith,	11 " Sept. 19-30
Bert L. Stinnett,	Master Mechanic,	7 " Sept. 19-26
Wendell M. Bishop,	Park Ranger,	2 " Sept. 14
Geo. T. Dustman,	Clerk,	9 " Sept. 21-30
Carrie O. Haunesser,	Stenog.-Typist,	1 " Sept. 17
M.P. Skinner,	Park Naturalist,	5 " Sept. 26-30
Kelen E. Moffatt,	Stenog.-Typist,	1 " Sept. 17
Dorothy A. Bowling,	Clerk	Sept. 21-Nov. 15*
*Leave without pay.		
August C. Neumann,	Master Printer,	$6\frac{1}{2}$ " Sept. 20 (noon)-26 S.L.

### Separations.

Clarence T. Brickel, Surveyor, \$150 per month, temporary, transferred to Mt. Rainier National Park, effective at close of Sept. 10th.

Ira D. Fleming, Asst. Buffalo Keeper, \$1200 p.a., resigned effective at close of Sept. 20, 1921.

Court B. Dewing, Park Ranger, \$1200 p.a., resigned, effective at close of Sept. 30, 1921.

Ernest S. Matthew, Park Ranger, \$1200 W.A.E., furloughed indefinitely at close of Sept. 19.

Hollis H. Matthew, Park Ranger, \$1200 WAE, furloughed indefinitely at close of Sept. 19.

Elnous M. Head, Park Ranger, \$1200 WAE, resigned, effective at close of Sept. 5, 1921.

Russell Sprinkel, Park Ranger, \$100 per month, temporary, laid off at close of Sept. 25.

Leon D. Mink, Park Ranger, \$100 per month, temporary, laid off at close of September 19.

Wendell S. Keate, Park Ranger, \$100 per month, temporary, laid off at close of September 30.

Frank J. Parsch, Park Ranger, \$100 per month, temporary, laid off at close of September 19.

Eugene Robertson, Park Ranger, \$100 p.m., temporary, laid off at close of September 15.

Ray D. Teesdale, Park Ranger, \$100 per month, temporary, laid off at close of Sept. 15.  
 Frank H. Knight, Park Ranger, \$100 per month, temporary, laid off at close of Sept. 14.  
 Vernon S. Downs, Park Ranger, \$100 per month, temporary, laid off at close of Sept. 20.  
 Edward E. Cogswell, Park Ranger, \$80 per mo., temporary, laid off at close of Sept. 12.  
 Carroll P. Donohoe, Park Ranger, \$80 per mo., temporary, laid off at close of Sept. 15.  
 Cyril C. Moore, Park Ranger, \$80 per mo., temporary, laid off at close of Sept. 20.  
 Edward E. Buckenmyer, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 15.  
 Marguerite Lindsley, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 17.  
 Paul R. Wylie, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 14.  
 Robert J. Potter, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 14.  
 James S. Baker, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 14.  
 Roger D. Baker, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 14.  
 Frank H. Schramm, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 5.  
 John T. Needham, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 30.  
 Warren H. Loyster, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 20.  
 Gordon Cottier, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 15.  
 Milton H. Lichtenwallner, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 20.  
 Kenneth W. Krippene, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 4.  
 C. Shelby Ferguson, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 5.  
 Samuel A. Kaplan, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 15.  
 Florian J. Ubel, Park Ranger, \$100 per annum, temporary, laid off at close of Sept. 19.  
 Harold E. Dammel, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 10.  
 Clarence E. King, Park Ranger, \$80 per month, temporary, laid off at close of Sept. 27.  
 Donald E. Mattson, Park Ranger, \$100 per month, temporary, laid off at close of Sept. 30.

### Appointments.

Appointments were received during the month, as follows:

Lee Cottrell, Park Ranger, \$1200 per annum, effective Sept. 9.

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Park Ranger Albert B. Eicknell, U.A.E., returned to duty effective September 20, 1921, having been on furlough since noon of June 18, 1921.

### III. WORK COMPLETED:

#### (a) Construction of Physical Improvements.

The fire lookout station and shelter built of native stone on top of Mount Washburn, described in last report, together with the two comfort stations in connection therewith, were finished during September.

A new stone building was erected near the entrance arch at the north gateway, for use in housing rangers charged with checking traffic there. It is 15 x 16 feet in size, inside dimensions, with walls 24 inches thick laid in cement mortar. The height of the masonry walls is 6 feet 3 inches with 2 logs 7 inches in diameter resting upon them. The gables are of log construction with dovetailed joints. Roof is of cedar shakes. The porch was constructed by embedding flagstones in cement mortar. This building was designed by Landscape Architect Hull and harmonizes splendidly with the basaltic rock arch. It does away with the unsightly tent which it was necessary to use heretofore for an office for registering visitors entering the park. It is contemplated putting running water into this building, and permission has been given by the Gardiner Water Company to secure it from the village mains.

A dry rock parapet wall was placed on the Mount Washburn road for protection at a particularly dangerous curve about half way to the top. The wall is 24 inches thick, 50 inches high, and 208 feet long.

New plank walks were laid over the formations at West Thumb to permit tourists getting about with greater security and comfort. The walks are twenty-four inches wide, made of 2 x 12 and 2 x 8 inch planking. About 700 lineal feet of new walk were completed. The old loading platform in front of the store and the old plank walk leading from the store to the boat landing were torn up and removed as they were badly broken and unsightly.



The crew engaged in the construction of the new bridge over the Gibbon River, at Morris Junction, finished that structure on September 8th. As the floor of the new bridge is about 16 inches higher than the old one, a fill was made at each end for an approach. About 120 cubic yards of gravel were hauled from a nearby pit for that purpose. On September 9th this crew moved over to the East Forest Reserve, where several new concrete bridges are to be built. The one over Mormon Creek was begun first. This is a thirty foot span bridge, similar in size and design to the Morris structure, which was described in the August report. Good progress was made in the construction of the Mormon Bridge so that by the end of the month both abutments were completed, the five steel I beams in place, and the forms made ready for placing the reinforcing steel in the floor slab. A temporary log bridge was built to be used during the construction period. Owing to the small amount of water in the stream at this season, the footings for abutments were excavated and poured without any pumping being required. An excellent grade of sand and gravel was obtained from a bar in the river nearby.

The improvement work at the Canyon described in the August report was continued during the month. This work consisted principally of the construction of log guard rails. The posts that support the railing were made by fastening together four eight inch logs to form a cluster. The two back logs were extended about nine inches above the front ones to form a seat, on which was placed the nine inch guard rail log. The posts were spaced 16 feet apart and embedded in the ground three feet, and further reinforced by a 7/16" cable attached to a deadman placed in the solid roadway.

The 9 inch guard rail logs were joined on tangents with a square scarf joint; on curves a 45° butt was used. 94 piers or cluster posts were set and 1604 lineal feet of guard rail completed. Two C.I. culverts were placed, one 18" diameter by 22' long, and the other 12" diameter by 26' long.

(b) Maintenance and Repair of Physical Improvements.

Work completed under this heading is combined with "Work in Progress", under IV.

(d) Service to the Public.

The usual high standard of service maintained for the benefit of park visitors was continued up to the close of the tourist season, on September 20th. This includes transportation service, hotel and camp accommodations, general store, photograph, curio, and bath houses, etc. The special service furnished by the National Park Service through its corps of rangers and including the running of the Information Office at Mammoth, special guide service at Mammoth and Upper Basin, lecture service at Mammoth, and special information service at each park station as required. The results of the season's efforts in this direction show a total number of visitors to the Information Office of 24,443, distribution of about 15,000 park circulars and sale of about 2,700 maps and pamphlets from the same office; the preparation of monthly bulletins by the Park Naturalist on birds, animals, flowers, and geology, with the posting each month during the season of an average of 48 sets of these on bulletin boards in hotels, camps, stores, etc., and a total distribution of 3,006 sets of these bulletins from the Information Office; also a total of 200 short lectures treating simply of the geology and natural features of the park, its object, administration, etc., given during the season at the hotel, permanent camp, and automobile camp at Mammoth. Also a total of 703 trips with 32,060 tourists were made by park guides at Mammoth and Upper Geyser Basin.

IV. WORK IN PROGRESS:

(a) Construction of physical improvements.

Good progress was made on the two new combined Ranger Stations and Community Centers which are under process of construction at Upper Geyser Basin and Grand Canyon, by contract with Mr. Merritt L. Rattle. At the end of September, the roofs were completed, chimneys were almost finished, and a force of carpenters had the doors, windows, floors, and other finishing well under way. Our plumbing force roughed in the plumbing work on the Upper Basin Station, and will do the same at Canyon during the month of October.



(b) Maintenance and Repair of Physical Improvements.

Dunraven Pass: The work of widening the roadway in Dunraven Pass was continued during the month. The steam shovel covered a distance of 2900 feet. 4,600 cubic yards of material were excavated, of which 95% was solid rock and 5% earth. Several G.I. culverts were placed, using 176 feet of 18 inch pipe and 68 feet of 24 inch pipe. In connection with the work, 15 square yards of hand placed rock wall were built.

The crew engaged in maintenance work near the east entrance moved camp September 6th to a place near the concrete under-pass bridge in Sylvan Pass, and on September 7th began making an earth and rock fill over the bridge. Approximately 920 cubic yards of material were required to bring the fill up to grade. The old log bridge was removed and ends of the logs in the old crib work sawed off wherever they extended beyond the slope lines of the fill. Considerable difficulty was experienced in securing material to make this fill. Except for a few inches on the surface, the earth and loose rock on the south side of the canyon was found to be so badly frozen that it could be excavated only by blasting. On the north side of the canyon, the slopes were mostly large boulders that required considerable blasting to break them into pieces small enough to be moved with teams.

The small crew engaged in road maintenance work in the South Forest Reserve moved down to the Snake River near Pacific Creek on September 8th and began the construction of a log crib diversion dam at a point on the left bank of the Snake River, about 200 yards below the mouth of Pacific Creek. The object of this wing dam is to divert the force of the current from the bank and prevent further encroachment into the roadway at that place. The crib is 42 feet long, 7 feet high, and 7 feet wide, inside measurements, and contains 75 cubic yards of boulders.

On September 21st, the crew having finished the above work, moved back in the park to the Lake, where they arrived September 25th. A jam of drift logs and snags was cleared away from the Pelican Creek Bridge and a foot path made between Hamilton's new store and the Lake Hotel.

On September 3rd, the small crew making repairs to the west entrance road finished that work, and on September 4th moved camp to Nez Perce Creek. The ditches along each side of the road between Nez Perce Creek and the Mountain Hotel were cleaned of silt and vegetable matter, which had been accumulating

for several years. Considerable water from warm springs in the vicinity flows along the road here, and unless the side ditches are deepened every few years, the water seeps under the roadway and tends to soften the roadbed. Twelve days were required for this work.

On September 17th, this crew moved to a place near Gibbon Falls, where they remained eight days removing drift logs and debris from the river between the falls and Gibbon Meadows. This was done to prevent the logs piling up and diverting the current into the roadway during high water, as occurred last spring.

A general rain occurred about September 4th which made it possible to dispense with some of the nineteen sprinklers, operating over 107 miles of the loop roads. One team was retained on each section to drag after the rains. About the 10th of the month, as the amount of travel became very small and the roads were in good condition, these teams were also laid off.

The thirteen small maintenance crews finished their work for the season and were gone from the park by the 15th of the month.

(c) Miscellaneous Improvement Work.

Several men were employed during the month, under the direction of Master Painter Moumarn, painting the exterior of buildings at Park Headquarters. Three complete buildings were completed, finishing the group known as "officers' row", and the work was continued on the group of smaller residences in the background known as the "non-commissioned officers' row". In addition, a new sign was painted and placed at Madison Junction; one trip was made around the park by the Master Painter straightening up the road and other signs, and two day's work was put in at Upper Geyser Basin staining the strips to be used for the beaver board walls in the new ranger station under process of construction there.

The small force employed under the plumbing department gave special attention to minor repairs to the plumbing system at headquarters, roughed in the new plumbing work in connection with construction of the station at Upper Basin, and on September 10th turned off and drained the water systems at the public automobile camps at Upper Basin, Lake, and Canyon, this action being necessary on account of cold weather.

One team, and from one to two men, were required throughout the month at each of the big automobile camps to keep the camps clean and a supply of dry wood on hand for use of the public.

Carpenter Shop: Two carpenters were employed in the shop at Headquarters making general repairs to equipment, and in addition they made much needed substantial repairs to the coal shed which had become dilapidated. A new concrete floor was put in, and the casings and doors were repaired and renewed. Work was begun on a small frame building at the south end of "officers' row", constructed for a guard house and recently used for storage purposes, with a view to remodeling it into a small dwelling house capable of taking care of two small families. Repairs were made on the porch, and under a general plan ditches were dug to connect up necessary toilets, baths, etc., to our water and sewer systems. This work will be continued as time can be spared from more important work.



Freighting operations by truck were unusually heavy during September, as our bulky supplies, such as hay and coal for the winter, began to arrive, and also on account of the necessity of hauling out supplies to the ranger stations sufficient to last during the long winter and into the spring up to the time when the roads are again open for heavy hauling.

Blacksmith Shop: The blacksmiths were busy during the month shoeing horses for the rangers, road crews, and the buffalo ranch; making and repairing tools for the shops, and repairing equipment for the different road crews. One man spent 16 days traveling between the various road camps shoeing horses, and another man spent several days operating the gravel loader at headquarters. One man was on leave for eleven days.

Garage: The men at the garage spent the month repairing motor trucks, passenger cars, and motorcycles. They also issued and received gasoline and oil.

The telephone system and power plant were maintained and operated under direction of the Chief Lineman. A small crew of linemen made extensive repairs to the Mammoth-Norris line, consisting principally of guying and bracing corner poles necessary on account of the two additional wires placed on the poles last year to provide metallic circuit, and also made repairs to the power lines about Headquarters, setting several poles that had rotted off.

The power plant was run 24 hours daily, including Sundays. The total current generated during the month was 18,970 kilowatt hours. Of this production, 7,320 kilowatt hours of current were sold to public utilities operating at Mammoth Hot Springs for lighting and power purposes, 1,359 kilowatt hours for lighting streets, and the balance, 10,291 kilowatt hours, were used for lighting Government buildings and furnishing power to our shops. The peak load of 70 kilowatt hours occurred at 8:00 P.M., September 4th.

Park Naturalist Skinner prepared a set of monthly notes on flowers, geology, animals, and birds. 43 sets were posted on bulletin boards and 830 sets were given out during September from the Information Office. A set of geological specimens for the Wyoming

State Fair was selected, special labels made, and the specimens packed and shipped. Two small collections were similarly prepared. Four lectures were given on natural features; data on natural features were collected daily; forest inspections were made. Other studies made by him resulted in reports on Seasonal Changes and Natural Phenomena. Thirteen days were devoted to special work assigned by the Superintendent. He has been on annual leave since September 26th.

The rush of office work incident to the close of the tourist season kept most of the force after hours nearly every day, and Sunday work was also necessary. The preparation of the annual report added to the regular duties. A total of 908 official letters were received, and 792 sent during the month.

Haying Operations: The hay cut during July and August was measured up, and it was found that we have a total of 1509.2 tons available for the coming winter, of which 510 tons is at Slough Creek; 150 tons at Yampays for wintering the horses; 701 tons at the Buffalo Ranch, and 148.2 tons at Gardiner. The timothy cut in August at the Buffalo Ranch measured up 224 tons, which was considerably more than was estimated.

The regular force at the Buffalo Ranch was engaged in caring for the tame herd of buffalo, and in fencing the hay stacks which have been put up during the summer against elk and buffalo. An eight horse team with driver was employed in discing the old meadows, about 150 acres in extent, which have become sod-bound. This work is still in progress.

Sanitation: Mr. Miller, Junior Assistant Sanitary Engineer, United States Public Health Service, completed design, tracings, and blueprints of the sewer line and septic tank for the Gardiner Checking Station; made topographical surveys at the Lake Camp and Lake Hotel of that portion of land through which the sewer will run, also topographical maps of these sections. Submitted complete report on all water analyses of the summer; submitted report on all dairies of the park; laid out sewer line at Lake Camp, and started construction. Checked progress at Canyon Ranger Station, Gardiner Checking Station, and Upper Basin Ranger Station. Completed design, tracings, and blueprints of sewer and septic tank for the Canyon Ranger Station. Submitted final blueprint of the design of the sedimentation tank for the Canyon permanent camp. The work at the Canyon Camp has reached the point



where the trunk sewer line has been completed and part of the laterals. Part of the forms for the sedimentation tank have been completed and concrete will soon be poured.

Trails and Snowshoe Cabins: No trail work was done during the month. The small pack train that was in use during the summer on this work was used to move the outfit required by Secretary Fall and party to a camp east of Yellowstone Lake, and in connection with the supplying of the Upper Yellowstone Station and the snowshoe cabins in that vicinity for the winter.

The ranger stations and snowshoe cabins throughout the park were furnished with supplies for the winter. A total of 15 stations and 21 cabins were so supplied, involving considerable extra trucking and the use of a pack train in several instances.

#### Improvements by Park Utilities.

The Yellowstone Park Hotel Company employed a force of carpenters on the work of constructing a log addition to the dining room at Old Faithful Inn, which was begun in September and is well under way. This addition is 50 x 51 feet in size and practically doubles the capacity of the dining room.

The Yellowstone Park Camps Company began the construction of 24 additional tent cottages at the Canyon Camp; 12 at the Lake Camp; and 8 at Old Faithful. This work is still under way. They also made excellent progress on the work of constructing a new sewer line at Canyon Camp. They also made plans for the construction of a large log amusement hall at Old Faithful and got out some of the logs for this work, which will be done during October if the weather will permit.

Mr. C.A. Hamilton continued the work on his Upper Basin store, which was finished last month except the painting and the finishing of the roof on the root cellar. He also made plans for the construction of a cottage for employees near his new Lake store.

#### V. WORK BEGUN:

The work of putting up fences around the shrubbery at headquarters, to prevent the deer and elk from ruining it by browsing, was begun immediately after the close of the tourist season, September 20th, and even before then a few

deer had come down and did a little damage before the fences were put up.

#### VI. PLANS OR PROPOSED WORK:

Plans for October contemplate the placing of the whole force upon a winter basis, leaving but one or two crews in the field.

It is contemplated continuing the work at the Canyon, constructing log guard rails, during October if the condition of the weather will permit.

A quantity of cement, steel, and other material, has been hauled to the East Forest road and the work of constructing new bridges will be continued until bad weather interferes.

Extra patrols will be made by the ranger force along the park lines at points where hunters are liable to cross the line during the open season for hunting in the adjoining states.

The work of disking at the Buffalo Ranch will be completed during the month.

The painting crew will continue until about the middle of October painting the exterior of the frame buildings at headquarters, when the crew will be laid off, with the exception of the Master Painter, and the winter work confined mostly to the shop and to renovating quarters and buildings.

The plumbing department contemplates completing the work of roughing in the plumbing at the Canyon Ranger Station, also beginning the work of supplying water and sewer connections to the frame building at headquarters which is being remodelled into a double set of living quarters.

The Hotel Company, Camps Company, and Mr. C.A. Hamilton, will continue the improvements mentioned under a previous heading as far as the weather conditions will allow.

#### VII. POLICIES:

There was no change in policies during the month.

### VIII. COST OF OPERATION.

This data will be shown on the regular cost report for September, which will be forwarded as soon as it can be completed. Data of special interest in connection with the July and August cost accounts are shown in the following table:

	<u>July</u>	<u>August</u>
Average cost per meal, in camp messes,	\$0.50 $\frac{1}{2}$	\$0.296
Cost of forage for horses, per meal,	.27-1/11	.27-1/23
Cost of freighting, per ton mile,	.21 $\frac{1}{2}$	.30

### IX. OTHER MATTERS OF INTEREST:

#### Wild Animals.

Buffalo, tame herd: The tame buffalo herd was rounded up on three occasions during the month for exhibition to special parties, the most notable being upon the visit of Secretary Fall and party, on September 18th. A careful count was made of the herd, which now contains a total of 506 animals, of which 70 are calves. The show herd of 19 bulls which had been kept at Mammoth during the tourist season was returned to the main ranch on the Lamar River on September 21st.

Buffalo, wild herd: No reports were received regarding the wild buffalo during the month.

Antelope: The antelope moved down from their winter ranch before the end of September, and 15 or 20 were in evidence on the alfalfa field at Gardiner before the end of the month.

Moose: Moose were noted in small numbers in various parts of the park during the month.

Bears: Bears were in evidence at all the garbage dumps of the hotels and camps and attracted the usual amount of attention. In several cases considerable damage was reported from them after the closing of the tourist season. A small black bear that had become quite vicious had to be killed by the rangers at Lake Station on September 4th. An extremely vicious black bear, with three cubs, was reported at our Dunraven Pass Road Camp, but by the time a ranger could be



dispatched to investigate, she had disappeared and gave no further trouble.

A saddle horse belonging to one of our park employees was injured at Lake Ranger Station on the night of September 5th to the extent that it had to be killed. A claim for compensation will be submitted in due form.

Grazing: Grass was plentiful and grazing excellent for wild animals throughout the month.

Stock: Several herds of milk cows, which were kept in the park during the summer for furnishing fresh milk to the hotels and camps, were taken out promptly at the close of the tourist season.

### Fishes.

Excellent fly fishing was enjoyed by visitors in the streams in the vicinity of Camp Roosevelt and in the Madison River. The report of the season's operations of the Bureau of Fisheries in the park was received, showing a total collection of black spotted trout eggs in park streams as 5,996,000, of which 2,871,000 were returned to park waters. Fish fry of other varieties received from outside sources and planted in the park brought the total of fish planted in the park for the year up to 4,051,000, summarized as follows:

#### EASTERN BROOK TROUT:

June 30 -	Fry received from U.S. Hatchery, Bozeman, Montana,	72,000	
June 30 -	Large fingerlings received from Montana State Hatchery, at Enigrant, Montana,	<u>10,000</u>	82,000

#### RAINBOW TROUT:

July 15 -	Fingerlings received from U.S. Hatchery, Bozeman, Montana,	80,000	
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July 2 -	<u>GRAYLING:</u> Received from the Montana State Hatchery, Anaconda, Montana,	1,000,000	
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#### BLACK SPOTTED BROOK:

Aug. 10 -	Eyed eggs, planted by National Park Service,	194,000	
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Aug. 16 to Aug. 27	Fry, planted by National Park Park Service,	1,150,400	
August	Planted by Fish Commission in small streams adjacent to Yellowstone Lake,	1,336,600	
	Taken from Lake Hatchery and planted by Wyoming State Officials in streams of Teton Nat'l Forest adjoining park,	200,000	
Aug. 19	Large Fingerlings of the Black Spotted variety, donated by Montana State Hatchery, of Enigrant, Montana,	18,000	2,889,000
TOTAL, .....			4,051,000

A special report received from Professor Richard A. Muttikowski, of the University of Idaho, a specialist on fish food, who spent most of the summer assisting Dr. Adams in his research work in the park in connection with the Roosevelt Wild Life Forest Experiment Station, indicates that there is an abundant supply of food for fish in Yellowstone Lake and not a scarcity, as has been suggested by some scientists.

#### Seasonal Changes.

Seasonal changes for September are indicated by the following notes, prepared by the Park Naturalist:

**Botanical:** There was no growth of plants during the month. A few fringed gentians, goldenrod, and harebells persisted until the tenth and purple asters and sunflowers a few days later. On the sixteenth the autumn coloring was highly developed and willow and aspen leaves were falling.

**Birds:** The last of the following were seen: tree swallow on the 1st, spotted sandpiper on the 3d, Swainson hawk on the 14th, and yellow warbler on the 18th. The main flight of Brewer blackbirds passed through on the 8th, and the pink-sided juncos on the 10th. The mallard drakes began acquiring winter plumage on the 1st.



**Animals:**

Most of the mule deer changed to gray winter coat during the first week of the month. The last ground squirrels were seen on the 1st, but there were still two woodchucks out on the 17th. Antelope were on the winter range by the middle of the month.

According to this data, the autumn is four days earlier than the average season.

**Arrests and Violations of Law.**

Arrests were made during the month, as follows:

Messrs. Lewis R. Nye and Chas. H. Hafferlin, of Livingston, Montana, were arrested September 3rd by Park Ranger Frazier for violation of the liquor laws. A quantity of liquor was found in their possession. They were arrested and tried before the United States Commissioner during the evening and sentenced to pay a fine of \$50 each and the costs of the case. The illegal property was confiscated by order of the court.

Mr. H.L. Aldrich, of Denver, Colorado, was arrested by Motorcycle Ranger Ernest S. Matthew for violating the speed regulations. He was tried September 9th before the United States Commissioner, who imposed a sentence of \$25 and the costs of the case.

Alfred Bowen, an employee of the Engineering Department, at the Canyon, was arrested September 14th by Night Watchman Chas. A. McMann, Yellowstone Park Camps Company, at the Canyon Camp, for stealing blankets from one of the tents. A petty larceny complaint was filed against him by Mr. McMann. A fine of \$50 and the costs of the case was imposed by the United States Commissioner on September 15th, after sufficient evidence had been introduced to convict the defendant. He paid the fine, returned the stolen property, and was permitted to return to work in one of our road crews.

**Forest Fires.**

General conditions indicated a large forest fire somewhere in the western district on September 1st. Several men were detailed to look it up, and upon investigation it was found to be in the northwestern section of the State of Idaho, many miles from the park.

A small fire was reported by tourists in the Hell-roaring district on the same date. Two rangers were sent out

from Tower Falls Station and located this fire at the mouth of Elk Creek, where it apparently had originated through the carelessness of a smoker. With the assistance of three men who were in the vicinity, this fire was placed under control and it was extinguished by a rain during the night. It covered about an acre of ground in scattering timber.

A small fire was discovered by motorcycle rangers in Gardiner Canyon, on September 5th, and was promptly extinguished.

Another fire was reported in the western district on September 5th, and upon investigation it was found to be a small fire just outside the park and opposite the 22 mile post.

A fire was discovered near the park line on the Madison River in the dry grass, evidently caused by carelessness on the part of fishermen. Park Ranger Clifford Anderson, from the Riverside Station, succeeded in controlling it after it had burned off an area of about 50 square feet.

#### Accidents and Casualties.

Mr. Henry Nicolaus, of Glendale, California, died suddenly of heart failure on September 9th, at Canyon Camp, where he was stopping on a park tour. His body was cared for by Undertaker G. Walter Selby, of Livingston, Montana, and shipped to his home for interment. His wife was accompanying him on the trip.

On September 20th, a light service car belonging to this office was enroute from headquarters to Gardiner, Montana, driven by the Master Painter and carrying five laborers, who were being sent to Gardiner to load freight from the car to the trucks. The car became unmanageable about a mile north of headquarters, ran into the bank, and tipped over, injuring three of the men quite severely. The injured were:

August C. Neumann, Master Painter, bruises of the legs between the knees and ankle.

H. Lyons, dislocated left shoulder, bruises of shoulders and arm.

William Warner, one broken rib, also bruises.

The ambulance was sent as soon as word was received and the injured men were brought to headquarters and given treatment by Dr. Crawbuck. An emergency hospital was provided for their use in a room of the building occupied as "bachelor"

quarters". Mr. Neumann was confined to his bed for a few days. At this writing, Mr. Warner has recovered sufficiently to be on his feet. In the case of Lyons, there was some doubt as to the extent of the injury to the bone, and he was sent to Chico Hot Springs Hospital, where X-Ray could be applied, and he is still in the hospital. These injuries have been duly reported to the Compensation Commission on the regular forms. The car was a wreck, and as it was practically worn out, no attempt will be made to repair it.

#### Sickness and Medical Attention.

Medical service in the park was furnished by Dr. W.E. Crawbuck. He reports that he made 67 professional calls on park employees. This service is performed under special arrangement with Government employees, who pay him the sum of \$1.00 per month each, or \$2.00 per month if they desire to have his service extend to their families. Under this arrangement, Dr. Crawbuck collected during the year, beginning October 1, 1920, a total sum of about \$2,350.00, and in addition to this he had a considerable practice among other park residents, residents of adjoining country, and park tourists.

The medical service for the Yellowstone Park Hotel Company was taken care of during the month of September by Dr. J.C. Treacy, of Helena, Montana.

Dental Service: Dr. Charles J. Rhoads, who was permitted to operate a dental office in the park during the summer, was away from September 1st to 14th inclusive, when he returned, finished up the few cases he had on hand, and left the park for his home, in Cody, Wyoming, on September 25rd. He reported that he did emergency work in 26 cases during the season, of which 19 were tourists.

#### Natural Phenomena.

Changes in natural phenomena in the park were noted during September as follows:

At Mammoth Hot Springs: Hysen Terrace continued to show a slow improvement. Minerva Terrace is increasing in size and improving in color. Jupiter, Pulpit, Angel, and Cleopatra Terraces remain about the same as last month. Bath Lake, Devil's Kitchen, and Orange Spring remain normal.

At Norris Geyser Basin: Whirligig and Mud Boiler continue as last month; the Valentine still plays every day or two; the Constant geyser is playing at more and more frequent intervals and is showing its old-time strength;



the Monarch is still inactive, the New Crater and Minute-man play normally.

At Lower Geyser Basin: The Fountain has been inactive, but the Great Fountain played normally every nine to twelve hours.

At Upper Geyser Basin there has been little change since last month. Old Faithful played on an average every 66 minutes; the Daisy played every 78 minutes on an average; the Grotto, Giant, and Giantess played normally, and the Beehive played on September 23rd, the first observed eruption this year; the Grand Geyser is still giving wonderful eruptions every eight to twelve hours, with the majority of its eruptions between ten and eleven hours; the Riverside is maintaining its wonderful regularity at seven hours between eruptions, and the Lone Star is doing likewise at three hour intervals.

#### Special Visitors.

The Secretary of the Interior, Honorable Albert B. Fall, and party, arrived at West Yellowstone, Montana, on the morning of September 7th. Accompanying the Secretary was Honorable D.W. Davis, Governor of Idaho, Secretary Fall's Secretary, Mr. H.C. Clann, Director A.P. Davis, United States Reclamation Service, and Mr. W.E. Reeds, Chief Engineer, United States Indian Service. I met the party at West Yellowstone and went with them to Old Faithful Inn, where we were joined the following day by Mrs. Fall and grandson, Master M.W. Everhart, Jr., of Pueblo, Colorado, Director Stephen T. Mather, National Park Service, and his business partner, Mr. Thomas Thorildsen. Mrs. A.P. Davis, who has been in the park for several weeks, also joined the party at Old Faithful.

On the morning of the 9th, the party went to Jackson Hole and visited the Bar B C Ranch over night, returning to the park the 10th, arriving at the south entrance about noon and taking luncheon at the Ranger Station, proceeding on to Canyon Hotel for the night, crossing from the West Thumb of Lake Yellowstone to Lake Hotel by boat.

On September 11th they remained at Grand Canyon until afternoon, then went over the top of Mount Washburn, and to Camp Roosevelt for the night.

On the 12th, they went to the Buffalo Ranch, where a big drive of 750 of the tame herd of buffalo was staged; had luncheon there, and in to Mammoth for the night.

13th, inspected Headquarters, and went back to Canyon Hotel for the night.

14th, to Lake Hotel in the morning, where they embarked, about 11:30, on the Motor Boat Busha for the Upper Yellowstone, where a camp had been previously prepared for them by the park rangers. The party going to Upper Yellowstone consisted of the Secretary, Mr. Reed, Mr. Mather, Mr. Thorildsen, Mr. Emerson Hough, Mr. Edmund Heller, Mr. H.H. Hays, and myself. Mrs. Fall, her grandson, and Mr. Clum stayed at Lake Hotel.

Mr. William C. Gregg, of Hackensack, New Jersey, who arrived in the park on July 22nd, left for his home on September 12th.

Mr. Emerson Hough, and wife, who spent most of the summer in the park, left on September 27th.

Mr. John B. Trevor, and family, who entered on June 23rd, spent practically the entire summer traveling by saddle and pack train over the trails in the park, leaving on September 17th.

Mr. J.C. Woodworth, Vice President, Northern Pacific Railroad, visited the park September 13th and 14th.

Mr. Wm. McMurray, General Passenger Agent, Union Pacific System, September 16th to 18th.

Mr. H.A. Buck, District Passenger Agent, and Mr. James Warwick, General Agent, Union Pacific System, of San Francisco, September 9th.

Major W.A. Welch, General Manager, Palisades Inter-State Park, New York, and wife, visited the park, entering via Gardiner on September 11th.

Mr. Dan Beard, National Scout Commissioner, Boy Scouts of America, and son, entered at Gardiner on September 4th and left on the 13th.

Mr. Edmund Heller, Naturalist, and wife, were in the park throughout the month of September and are still here studying the bear, buffalo, elk, and other big game.

"Scott's Modern Caravan", which left Brooklyn, N.Y., on June 15th, in charge of William B. Scott, arrived at the eastern entrance and came into the park on September 12th. The Caravan as it entered the park consisted of 19 cars and 83 people. Special courtesies were extended to them, and inasmuch as they were bona fide settlers, enroute from the



east to settle in Idaho with their families, no charge was made for their tickets to pass through the park. Governor Davis, of Idaho, who was in the park with Secretary Fall's party at the time, kept in touch with the caravan, in which he is particularly interested as they expect to settle in Idaho. The party camped at Lake outlet the night of the 12th, 13th, and 14th, visited Upper Geyser Basin and camped at Madison Junction the night of the 15th, and left the park via the west entrance about noon of the 16th of September.

#### Special Trip of Traveling Passenger Agents:

A delegation of 256 Traveling Passenger Agents, representing nearly every railroad in the United States, entered the park at West Yellowstone on the morning of September 16th. They were accompanied by Mr. A.L. Craig, Mr. W.M. McMurray, and Mr. D.S. Spencer, General Passenger Agents, Mr. W.S. Basinger, Passenger Traffic Manager, Mr. W.K. Cumliff, Assistant General Passenger Agent, and Mr. Gordon S. Noble, Traveling Freight and Passenger Agent, all of the Union Pacific System. The party had lunch at Canyon Camp and spent the night of the 16th at Old Faithful Inn; at Grand Canyon Hotel the night of the 17th, visited Mammoth for luncheon, and left via the western entrance on the 18th.

#### Motion Pictures.

The Ben Wilson Productions, which operated in the park during August, finished their work and left during September.

#### Miscellaneous.

Religious services were held in the Government Chapel as follows:

- Sept. 4 - Morning service by Rev. J.F. Pritchard, Episcopal Minister of Migrant, Montana; evening services by Rev. J.H. Groth, English Lutheran Minister, of Livingston, Montana.
- Sept. 11 - Morning service by Rev. J.F. Pritchard.
- Sept. 19 - Morning and evening services by Rev. J.F. Pritchard.

Copies of Circulars 18, 19, and 20, issued during September, are enclosed for your information.

#### 2. RECEIPTS AND REMITTANCES:

The regular monthly report of revenues due, collected, and transmitted during the month of September is

enclosed. The total amount of money enclosed, as shown by this report, is described as follows:

Postal Money Order, No. 47864, dated September 3, 1921, drawn by the Postmaster at Yellowstone Park, Wyo., on the Postmaster at Washington, D.C., to your order,	\$ 9.09
Check No. 3035, dated September 3rd, drawn to your order by Messrs Pryor & Trischman, on Yegen Bros., Bankers, .....	15.16
Check No. 1307, dated September 17, 1921, drawn to your order by the Yellowstone Park Camps Company, on the Northwestern National Bank, Livingston, Montana,	90.11
Check No. 235, dated September 12, drawn to your order by J.R. Haynes, on Yegen Bros., Bankers, Gardiner, Mont.,	29.80
Check No. 941, dated Sept. 16, 1921, drawn to your order by the Yellowstone Park Hotel Company, on the National Bank of Montana, of Helena, Montana,	189.60
Check No. 1242, dated September 9, 1921, drawn to your order by the Yellowstone Park Transportation Company, on the National Bank of Montana, Helena, Montana,	74.53
Check No. 1308, dated September 18, drawn to your order by the Yellowstone Park Transportation Company, on the National Bank of Montana, Helena, Montana, in payment of rental of Yellowstone Park Boat Company.	<u>174.37</u>
Total, .....	\$582.46

Acknowledgment of receipt of the enclosed money is requested.

Cordially yours,

Horace M. Albright,  
Superintendent.

The Director,  
National Park Service,  
Department of the Interior,  
Washington, D.C.

Enclosures.

CAL:CH

October 5, 1921.

Brief Outline of Work accomplished during the month of

September by the Painting Division.

Finishing of Wooden Dike, known as "Officer's Row"  
Started work on row known as "N. C. Row".  
In took into park, straightening signs etc.  
In sick leave seven days.  
Two days work on New Ranger Station <sup>Tacoma, Alaska</sup> Officer's Basin.  
New Ranger Station sign, made and placed at Madison Park.  
A. C. Hummer.

Fill out briefly and return to Mr. Lindsley before the  
5th of the following month. Data needed for monthly report.

September, 1921.

Brief Outline of Work accomplished during the month of

by the \_\_\_\_\_ Division.

Fill out briefly and return to Mr. Lindsley before the 5th of the following month. Data needed for monthly report.



# Completed Oct

Roussell in bloom, <sup>New</sup> ~~Laurel~~ <sup>R</sup>  
Station:  
Red ground floor 14 ft 2 new  
rooms toilet & kitchen  
Ripon water system means

"Scott's Modern Caravan" which left Brooklyn, N.Y. on  
*in City of Melrose & Scott*  
June 15, arrived at Eastern entrance and came into the park  
on September 12th. The Caravan as it entered the park consisted  
of 19 cars <sup>(2 trucks)</sup> and 83 people.

Special courtesies were extended to them, and inasmuch  
as they were bona fide settlers, en route from the East to settle  
in Idaho with their families, no charge was made for their tickets  
to pass through the park. Governor Davis, of Idaho, was in the  
park with Secretary Fall's party at the time, and through his Secretary,  
Mr.          Brown, kept in touch with the ~~party~~ caravan in which he is  
particularly interested, as they expect to settle in Idaho.

The party camped at Lake outlet night of the 12th and 13th, <sup>11411</sup>  
visited Upper Geyser Basin and camped  
at 19 night of the 15th, and left the park via the "east  
entrance ~~on the 16th~~ about noon the 16th of September.

Special Trip of Traveling Passenger Agents. A delegation of ~~253~~ (?)

Traveling Passenger Agents representing nearly every railroad in the United  
States entered the park at West He lowstone on the morning of August 12th.  
They were accompanied by Mr. L. Craig,                     , and Mr. W. M. McFarrey,  
                    , Union Pacific                     , and Mr. Dace                      &                       
                     (the U. P. Agent went to C. & P. for helicopter) had lunch at Oregon camp and stayed  
The party stayed the night of the 16th at Old Faithful Inn, at Grand Canyon of the  
night of the 17th, visited Mammoth for luncheon and left via the western  
entrance on the 18th.

Mr. W. K. Cawdell, Pres. U. P. R. Co. <sup>Denver</sup>  
Mr. Gordon Noble, Tr. & Pass Agt. U. P. R. Co. <sup>Philadelphia</sup>

# FISH PLANTED, 1921 SEASON.

*Eastern Brook Trout*

June 30	Eastern Brook Trout: Fry received from U.S. Hatchery, Bozeman, Mont.,	72,000
June 30	Large Fingerlings received from Montana State Hatchery, at Emigrant, Montana,	10,000
July 15	Rainbow Trout: Fingerlings received from U.S. Hatchery, Bozeman, Montana,	80,000
July 2	Grayling: Received from the Montana State Hatchery, at Anaconda, Montana,	1,000,000
Aug. 10	Black Spotted Trout (Eyed Eggs), planted by National Park Service,	184,000
Aug. 16 to Aug. 27	Black Spotted Trout (Fry), planted by National Park Service,	1,150,400
August	Planted by Fish Commission in small streams adjacent to Yellowstone Lake,	1,336,600
	Taken from Lake Hatchery and planted by Wyoming State Officials in streams of Teton National Forest adjoining the park,	200,000
Aug. 19	Large Fingerlings of the Black Spotted variety, donated by Montana State Hatchery, of Emigrant, Montana,	18,000

*7-4-21*

## TABLE SHOWING RECAPITULATION OF FISH PLANTED.

Total collection of blackspotted trout eggs from park waters,	5,996,000
Number of eggs collected in the park and returned to park waters,	2,871,000

## TOTAL NUMBER OF FISH PLANTED IN PARK.

Blackspotted Trout, collected in park,	2,871,000
Blackspotted trout, received from Montana State Hatchery,	18,000
	<u>2,889,000</u>
Eastern Brook Trout, received from outside hatcheries,	82,000
Rainbow Trout, received from outside hatcheries,	80,000
Grayling, received from Montana State Hatchery, at Anaconda,	<u>1,000,000</u>
Total fish plants for the year,	4,051,000

U. S. DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU

Yellowstone Park, Wyo.



WEATHER CONDITIONS--MAMMOTH HOT SPRINGS,

SEPTEMBER, 1921.

Normal: The month as a whole was cold, windy and somewhat deficient in moisture, but with about normal sunshine.

Temperature: Monthly mean,  $40.0^{\circ}$ , is  $6.8^{\circ}$  below normal. With one exception, 1912, it is the coldest September since the record began in 1887. No unusually low temperatures occurred, but there was a marked daily deficiency extending over the first three weeks, except the first two days which were the warmest of the month.

Precipitation: Total, 0.84 inch, is 0.17 inch below normal. Practically all occurred as rain and over 50% of the month's total fell on the 22d and 23d.

Snowfall: Total 0.1 inch, which fell on the 19th. However, traces of snow occurred on the 10th, 11th and 12th. The average or normal September snowfall is 1.0 inches.

Wind: The total movement of 1800 miles, is considerably the highest of record, but the maximum velocity of 39 miles from the southwest on the 22d has been exceeded several times.

Humidity: Percentage of possible, 64, is about normal.

J. H. Fletcher,  
Observer.



~~September~~

Completed design, tracings and blueprints of the sewer line and septic tank for the Gardiner Checking Station.

Made a topographical survey of that portion of land thru which the sewer will run at the Lake Camp.

Made topographical survey of the same territory at the Lake Hotel.

Made topographical maps of those sections at Lake Camp and Lake Hotel.

Submitted complete report on all water analyses of the summer.

Submitted report on all dairies of the park.

Laid out sewer line at Lake Camp. and started construction.

Checked progress at Canyon Ranger Station, Gardiner Checking Station, Upper Basin Ranger Station.

Completed design, tracings and blueprints of sewer and septic tank for the Canyon Ranger Station.

Submitted final blueprint of the design of the sedimentation tank for the Canyon Permanent Camp.

The work at the Canyon Camp has reached the point where the ~~se~~ trunk sewer line has been completed and part of the laterals. Part of the forms for the sedimentation tank have been completed and concrete will soon be poured.

Report of Paper Plant  
of Sept 1921

2200 Composites		18970
1000 Composites	1320	
1000 Lighting	<u>1359</u>	9679
20000 Composites		10291
each Load 9/4-8/12		70K10

October 1, 1921.

REPORT ON WORK PERFORMED.

To: Chester A. Lindsley, Assistant Superintendent.

From: L.P. Skinner, Park Naturalist.

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Park Naturalist Skinner prepared a set of monthly notes on flowers, geology, animals, and birds; 48 sets were posted on bulletin boards and 880 sets were given out during September from the Information Office. A set of geological specimens for the Wyoming State Fair was selected, special labels made, and the specimens packed and shipped. Two small collections were similarly prepared. 4 lectures were given on natural features. Data on natural features <sup>were</sup> ~~was~~ collected daily. Forest inspections were made. Other studies made by him resulted in reports on Seasonal Changes and Natural Phenomena. Thirteen days were devoted to special work assigned by the Superintendent. On annual leave Sept 26-30th inclusive.

October 1, 1921.

REPORT ON NATURAL PHENOMENA.

To: Chester A. Lindsley, Assistant Superintendent.

From: M.P. Skinner, Park Naturalist.

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At Mammoth Hot Springs, Hymen Terrace continued to show a slow improvement. Minerva Terrace is increasing in size and improving in color. Jupiter, Pulpit, Angel, and Cleopatra Terraces remain about the same as last month. Bath Lake, Devil's Kitchen, and Orange Spring remain normal.

At Morris Geyser Basin: Whirligig and Mud Boiler continue as last month; the Valentine still plays every day or two; the Constant geyser is playing at more and more frequent intervals and is showing its old-time strength; the Monarch is still inactive; the New Crater and Minute-man play normally.

At Lower Geyser Basin: the Fountain has been inactive but the Great Fountain played normally every 9-12 hours.

At Upper Geyser Basin there has been little change since last month: Old Faithful played on an average every 60 minutes; the Daisy played every 78 minutes on an average; the Grotto, Giant, and Giantess played normally and the Beehive played on Sept 23rd, the first observed eruption this year; the Grand Geyser is still giving wonderful eruptions every 8-12 hours with the majority of its eruptions between ten and eleven hours; the Riverside is maintaining its wonderful regularity at seven hours between eruptions, and the Lone Star is doing likewise at three hour intervals.



October 1, 1921.

REPORT ON SEASONAL CHANGES.

To: Chester A. Lindsley, Assistant Superintendent,

From: W.P. Skinner, Park Naturalist.

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Botanical: There was no growth of plants during the month. A few fringed gentians, goldenrod, and harebells persisted until the tenth and purple asters and sunflowers a few days later. On the sixteenth the autumn coloring was highly developed and willow and aspen leaves were falling.

Birds: The last of the following were seen: tree swallow on the first, spotted sandpiper on the third, Swainson hawk on the fourteenth, and yellow warbler on the eighteenth. The main flight of Brewer blackbirds passed through on the eighth and the pink-sided juncos on the tenth. The mallard drakes began acquiring winter plumage on the first.

Animals: Last of the mule deer changed to gray winter coat during first week of the month.

The last ground squirrels were seen on the first but there were still two woodchucks out on the seventeenth.

Antelope on the winter range by the middle of the month.

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According to this data the autumn is four days earlier than the average season.